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ABSTRACT

Seven studies explored the relationships between risk-taking predispositions and health attitudes, beliefs, and involvement. Data were gathered from surveys, and from lab and field experiments on 1,323 subjects. Findings indicated five risk-taking factors: adventurousness, rebelliousness, impulsiveness, physical risk taking, and unconventional risk taking. These factors vary systematically with risky behavior, cognitive and affective involvement, health locus of control, conviction, need for cognition, media use, source confidence, and demographics. The risk-taking indices are positively correlated with both smoking behavior and speeding. Positive feelings about health are positively associated with adventurous and physical risk taking and negatively associated with impulsive risk taking. Adventurous and physical risk taking are also positively correlated with conviction. Need for cognition is positively related to adventurousness and negatively related to impulsiveness. Generally, use of media for health information is unrelated or negatively related to risk taking, but radio exposure tends to be high for risk takers. A theoretical discussion explores potential hypotheses for the effects of these risk-taking constructs for information processing. (Eleven tables of data are included, and 65 references are attached.) (Author/SR)

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COMMUNICATING WITH RISK TAKERS: INFORMATION SOURCES AND HEALTH ATTITUDES, BELIEFS AND INVOLVEMENT

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Seven studies explore the relationships between risk-taking predispositions and health attitudes, beliefs, and involvement. Data are gathered from surveys, and lab and field experiments on 1,323 subjects. Findings indicate five risk-taking factors: adventurousness, rebelliousness, impulsiveness, physical risk taking, and unconventional risk taking. These factors vary systematically with risky behavior, cognitive and affective involvement, health locus of control, conviction, need for cognition, media use, source confidence, and demographics. The risk-taking indices are positively correlated with both smoking behavior and speeding. Positive feelings about health are positively associated with adventurous and physical risk taking and negatively associated with impulsive risk taking. Adventurous and physical risk taking are also positively correlated with conviction. Need for cognition is positively related to adventurousness and negatively related to impulsiveness. Generally, use of media for health information is unrelated or negatively related to risk taking, but radio exposure tends to be high for risk takers. The authors present a theoretical discussion which explores potential hypotheses for the effects of these risk-taking constructs for information processing.

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INTRODUCTION

Americans face decisions about risk every day. Media bombard us with reports of health risks, environmental risks, the risk of nuclear war, and countless pervasive risks in our daily routine. Experts tell people what's risky and what to avoid, but most people continue to make their own determinations and take their own chances.

People who are not averse to risk present problems for the public relations professional who is attempting to promote preventive care, attention to healthful lifestyles--including safety on the job--and other risk avoidance behaviors. What, for example, does the public relations director of the American Lung Association do about that persistent 30 percent who continue to choose to smoke? Or what strategies does the Director of Public Information for the U. S. Environmental Protection Agency enlist to motivate homeowners to take the initiative in protecting water supplies for privately owned wells?

Knowing how the public will respond to risk presents new challenges to public relations professionals. Some might ask, "Who can afford to gamble with their health?" or "Why would anyone take risks with their environment?" Yet, many people take risks with their health and many do not seem averse to living in a risky environment. There are even organizations for those who actively seek adventure through risky behaviors such as spelunking, sky diving and other athletic or physical activities. Those who enjoy and seek out such adventure may be predisposed to take other risks in their lives, such as infrequent medical checkups or risky sexual behaviors. Others may engage in risky behaviors as a sort of general rebellion. These risk takers may rebel against rules or what appears to impose regulations on their lives. And still another type of risk taker may only act on impulse, engaging in risky behaviors without much thought.

We are convinced that the majority of people, whether out of "calm concern" or other reasoning, tolerate a great deal of risk in their lives. We are not in

this paper concerned about that public which reacts to risk with hazard avoidance and presents community relations problems for some industries and government agencies. Rather, we are concerned with what we see as a much more difficult problem: reaching a public of risk takers with messages about risks to be avoided. How can we communicate effectively with risk takers and make sure they have the information necessary to make risky choices?

Risk-Taking Predispositions

Our concern with risk taking is from the point of view of the actor; the individual involved must perceive some likelihood of negative consequences. Behavior which turns out to have negative consequences, but which the actor did not understand was likely to result in punishment, is not, in our view, risk-taking behavior. Thus, our definition of a risk-taking predisposition is a tendency to engage in behaviors that the actor understands have some likelihood of resulting in a punishment or in the loss of a reward. We assume that some individuals are not risk aversive and, in fact, may enjoy taking risks. We are not calling these individuals risk seekers in that we don't believe it is the possible negative consequence that they are always seeking, but rather some other element such as sensation or arousal from taking the risk or the potential reward.

Origins of Risk Taking

There are at least two potential origins for risk-taking predispositions. First, variation in risk-taking tendencies may originate as a preference for or aversion to arousing stimuli. Zuckerman (1988) suggests these preferences stem from biological mechanisms. Zuckerman, Kolin, Price and Zoob's (1964) Sensation Seeking Scale is based on an assumption that people differ reliably in their preference for or aversion to arousing stimuli. Generally those who score high on sensation seeking are more restless when confined to monotonous situations (Zuckerman, Persky, Hopkins, Murtaugh, Basu & Schilling, 1966).

Zuckerman postulates a bio-chemical basis for this preference or aversion. In a summary of the biochemical basis of sensation seeking Zuckerman (1988) reports a positive correlation of testosterone levels with sensation seeking for males. Several studies have examined the role of monoamine oxidase (MAO) and sensation seeking. MAO is an enzyme that, generally speaking, determines the sensitivity of the neural systems it regulates. MAO shows a negative correlation with sensation seeking.

> There is a considerable literature linking these monoamine systems to activity, exploratiVeness, aggressiveness, lack of inhibition, consummatory behavior, sexual behavior, fear or lack of it, and sensitivity to reward and punishment in other species, primarily rodents. (Zuckerman, 1988, p. 185)

While Fulker, Eysenck and Zuckerman (1980) report evidence from identical and fraternal twins for high heritability of sensation seeking, they also conclude that at least one third of the variation in the trait is not inherited. Research indicates that sensation seeking peaks in the late teens and early twenties and declines with age (Zuckerman, 1979).

Sensation Seeking

Validation studies of sensation seeking have found four factors (Zuckerman, 1971; Zuckerman, Eysenck & Eysenck, 1978; Ball, Farnill & Wangeman, 1984; Rowland & Franken, 1986; and Birenbaum, 1986) associated with the sensation seeking scale:

> **Thrill and Adventure Seeking (TAS):** a desire to seek sensation through physically risky activities that provide unusual sensations and novel experiences, e.g. parachuting and scuba diving.
> **Experience Seeking (ES):** a desire to seek sensation through a non-conforming lifestyle, e.g. travel, music, art, drugs, and unconventional friends.
> **Disinhibition (DIS):** a desire to seek sensation through social stimulation, e.g. parties, social drinking, and variety of sex partners.
> **Boredom Susceptibility (BS):** an aversion to boredom produced by unchanging conditions or persons and a great restlessness when things are the same for any period of time. (Zuckerman, 1988, p. 175)

Zuckerman and his research group have found differences for these scales on preferences for visual complexity, music and media, as well as age and sex differences. Sensation seekers engage in activities that include parachuting, hang-gliding, scuba diving, skiing, mountain climbing, and auto racing (Zuckerman & Neeb, 1980). But not all of those interested in athletic pursuits are sensation seeking; gymnasts and physical education majors are not and runners seem to be lower on the scale than non-runners.

Those high in sensation seeking prefer visual complexity (Looft & Baranowski, 1971; Zuckerman, Bone, Neary, Mangelsdorff & Brustman, 1972) and ambiguous surrealistic or impressionistic paintings (Zuckerman & Ulrich, 1983).

High sensation seekers tend to prefer classical or jazz music while those low in sensation seeking prefer Muzak. High sensation seekers (who were psychiatric patients) liked all music more than low sensation seekers, but had even greater preference for "grating" music (Watson, Anderson & Schulte, 1977).

Several media differences have also been reported in the sensation-seeking studies. Sensation seekers (measured with the Change Seeker Index) spend more time listening to music, attend movies more frequently, attend X-rated movies more, read more, read more fiction books (Brown, Ruder, Ruder & Young, 1974), and have higher levels of curiosity about morbid events or sexual events.

Impulsivity

The Eysencks (Eysenck, 1958; Eysenck & Eysenck, 1969) proposed a two-factor theory of personality: Factor E (extraversion) and Factor N (neuroticism). Factor E includes the subfactors impulsivity and sociability. Eysenck and Eysenck (1977) administered impulsivity scales to over 2000 subjects and found four subfactors of impulsivity:

> **Impulsivity in the Narrow Sense (IMPn)**--Items in this factor include: a) Do you often buy things on impulse? b) Do you generally do and say things without stopping to think? c) Are you an impulsive person?

Risk taking--Includes questions such as: a) Do you quite enjoy taking risks? b) Would life with no danger in it be too dull for you? c) Would you do almost anything for a dare?
Nonplanning--Includes questions such as: a) Do you like planning things carefully ahead of time? b) When buying things, do you usually bother about the guarantee? c) When you go on a trip, do you like to plan routes and timetables carefully?
Liveliness--Includes: a) Do you usually make up your mind quickly? b) Do you prefer to "sleep on it" before making decisions?

For Eysenck and Eysenck (1978, 1980), impulsiveness and venturesomeness are distinct concepts with the former deriving from Psychoticism, and the latter from Extraversion. Eysenck, Pearson, Easting, and Allsopp (1985) report that venturesomeness and impulsiveness decline with age. While females score higher on impulsiveness, males score higher on venturesomeness. Eysenck, Pearson, Easting, and Allsopp conclude that while impulsiveness and venturesomeness are correlated (reported correlations range from about .10 to .40), they are different concepts.

In a recent validation, Corulla (1988) also found that females score higher than males on the Impulsivity Index. In this study impulsiveness and venturesomeness are positively correlated (average correlation = .21), but impulsiveness is not correlated with any of the Zuckerman sensation-seeking subscales. Venturesomeness, on the other hand, is positively associated with disinhibition and experience-seeking in males, and with thrill and adventure-seeking for females. Corulla concludes that sensation seeking and those constructs of interest to the Eysenck research group are not identical and that sensation seeking measures something not measured in the Eysenck Personality Indices.

Uncertainty Orientation and Risk Taking

Another concept we think is similar to our notion of a risk-taking predisposition and which has origins in learning models is uncertainty orientation. Sorrentino and Short (1986) argue that because uncertainty is inherent in any risk situation, the individual difference variable they call uncertainty orientation should be influential in risk-taking situations. Certainty-oriented people do not like ambiguity in their lives. They can be thought of as careful, cautious individ-

uals who avoid unpredictability; low risk takers. Uncertainty-oriented people, on the other hand, like some ambiguity in their lives. They can be characterized as risk takers who thrive on unpredictability.

We assume with Sorrentino that high risk takers, at least those who are uncertainty-oriented, may have been rewarded for exploratory or risky behaviors, while low risk takers, at least those who are certainty-oriented, may not have been rewarded or may even have been punished for these behaviors.

In a research program begun recently by the authors (Ferguson & Valenti, 1988; Valenti & Ferguson, 1988), we focus on risk-taking behavior predispositions rather than on the origins of the behaviors, such as uncertainty orientation or sensation seeking. Our focus on behavior tendencies comes from an assumption that risk-taking behavior has several potential origins and while the origins will help to understand why the behavior occurs, the behavioral tendenciess are of particular interest to communicators.

This early work led us to postulate three types of risk-taking behavior predispositions, which we called adventurousness, impulsiveness and rebelliousness. Many of the items we used in constructing indices for these constructs strongly resemble those used in Zuckerman's Experience Seeking, Disinhibition, and Thrill and Adventure-Seeking Subscales (Zuckerman, 1971), and Eysenck's Venturesomeness and Impulsivity Indices (Eysenck, 1958; Eysenck & Eysenck, 1978). Some were borrowed from these scales and others we derived as we developed our understanding of these constructs.

Information Processing and Risk Taking

Sorrentino and Hewitt (1984) tested whether there were differences in the way uncertainty-oriented and certainty-oriented people approach personally relevant information. They found that uncertainty-oriented people chose to undertake activity that would resolve uncertainty about a new and potentially important ability,

whereas certainty-oriented persons actually chose to undertake alternate activity that would tell them nothing new about this ability.

Sorrentino, Bobocel, Gitta, Olson and Hewitt (1988) explored the interaction between uncertainty orientation, routes to persuasion, and involvement. They found that personal relevance does not increase systematic processing for all persons; uncertainty-oriented persons are more motivated to engage in systematic processing when personal relevance increases, whereas certainty-oriented persons become more motivated when personal relevance decreases.

In a field experiment examining radon reduction behaviors (Valenti & Ferguson, 1988, Ferguson & Valenti, 1988) we found several interactions for message source and message target with these risk-taking orientations on behaviors to reduce risks associated with radon. We found that individuals high in adventurousness, for example, approach messages about health risks or environmental risks differently than those low in adventurousness. Those high in adventurousness were more likely to respond to a message in a government brochure than to the same message in a newspaper. Those high in rebelliousness were more likely than those low in rebelliousness to engage in risk-reducing behavior following a newspaper message or a message targeting children, both which clearly specified the action steps.

In the studies reported here we explored two research questions. First, we are interested in how closely our risk-taking behavior factors match the factors Zuckerman (1971), Eysenck (1958), and Eysenck and Eysenck (1978) derive from their research. Second, we are interested in the relationship of risk-taking behaviors to other variables which may be useful to the communicator such as involvement with one's health, health locus of control, health attitude conviction, need for cognition, source confidence, media habits, and demographics. Thus, this paper attempts to validate our measures by association with other known indicators of constructs similar to risk taking such as sensation seeking, impulsivity, venturesomeness and

uncertainty orientation and with other behavioral indicators of risk taking such as smoking behaviors and speeding.

METHODOLOGY

Since we began this research program, we have conducted eight separate studies using slightly different versions of the risk-taking questions. Seven studies are reported here. (The eighth is a field experiment designed to replicate Study Six and is currently underway.) These studies include lab experiments and a survey administered to college students and field experiments administered to general public populations. We collected data from a total of 1323 subjects. Although we discuss each of the studies only briefly, further information on the sampling or selection strategies and the context of the studies is available in the works cited and from the authors.

Study One

This study is part of an experiment conducted with 75 undergraduate and graduate students in Fall, 1988. We recruited subjects both by offering course credit and by announcements in classes. Subjects reporting for the experiment were told they would be watching a political debate and they were asked to fill out a pretest questionnaire prior to watching the debate. The data reported here are from the pretest. Additional information on this study can be found in Ferguson, Hollander and Melwani (1989).

Study Two

This study is also an experiment with college students (n = 46) in Fall, 1988, recruited by offering course credit and by inviting students to watch a presidential debate. Subjects completed pretest questionnaires prior to participating in the experiment. The data reported here are from the pretest. Additional details for this study can be found in Ferguson, Melwani and Hollander (1989).

Study Three

This study was conducted in Fall, 1988 with 261 members of an Introduction to Public Relations course. Subjects completed a questionnaire which included risk-taking measures.

Study Four

This experiment was conducted beginning in Fall, 1988. We recruited 283 students from a subject pool of marketing students and from classes in a college of journalism and communications. Again, subjects completed pretest questionnaires prior to participating in the experiment. Additional information on this study can be found in Adler (1989).

Study Five

This experiment was a self-administered survey of 252 members of three specifically targeted groups conducted in Spring, 1988. We administered questionnaires to 79 runners and family members attending a hospital-sponsored Health Run. Also, students in a public opinion theory and research methods class taught by the authors administered the same questionnaire to 155 individuals they previously knew to be smokers. Finally, we administered the same questionnaires to 18 members of the state Public Interest Research Group at an environmental seminar.

Study Six

In this experiment questionnaires were administered to 244 adults at a county fair in Fall, 1988. Interviewers approached visitors to an exhibit at the fair and asked them to complete a questionnaire. The items reported here are from the pretest section of the instrument.

Study Seven

In a field experiment begun in Fall 1987, the authors randomly sampled 837 homeowners in three counties. A telephone interview pretested these homeowners on risk-taking tendencies. Some 706 of these homeowners agreed to participate in a message-testing experiment and were mailed a booklet varying four message factors.

Some 317 subjects returned the booklet and about six months later were contacted with a follow-up mail questionnaire to measure attitudes and their responses. This data set has 162 subjects. Additional background on this study can be found in Ferguson and Valenti (1988), Valenti and Ferguson (1988a), and Valenti and Ferguson (1988b).

The Merged Data Set

The data from all seven studies were concatenated into one data set for the risk measures and the other variables that occurred across more than one study. The findings section reports the results of the factor analysis of risk-taking measures as well as the other variables.

FINDINGS

We measured risk taking with 52 different questions derived from Eysenck (1958), Eysenck and Eysenck (1969), Eysenck and Eysenck (1978), Eysenck & Zuckerman (1978) Zuckerman (1971), and Zuckerman (1985). These items were submitted to a principal axis factor analysis. Based on this analysis, we eliminated 10 items which did not load on any of the factors. We concluded from the scree plot of the eigenvalues that a five-factor solution would be a reasonable interpretation of the data. To verify that assumption, we resubmitted the remaining 42 items to a factor analysis forcing a five-factor solution. Table 1 presents the factor loadings for the five-factor solution with a varimax rotation. The varimax rotation was chosen over the oblique rotation because the loadings were basically the same and the orthogonal solution is more appropriate to our objectives of exploring sub-components of risk taking.

[TABLE 1 ABOUT HERE]

Risk-Taking Factors

The labels we have given to the factors stem from our interpretations of the factors. Where appropriate we have included the labels used by Zuckerman (Z) and the Eysenck's (E) when it appears that the items are similar enough to represent the same construct. The five factors in our studies appear to replicate three of the four Zuckerman risk-seeking factors and two of the four Eysenck impulsivity factors. Although we included items which loaded on Zuckerman's (1988) boredom susceptibility (BS) and Eysenck & Eysenck's (1977) nonplanning impulsivity factor, we did not replicate those factors in this data set.

We are not claiming any particular advantage for the labels we use over those chosen by Zuckerman or by Eysenck and Eysenck. We are attempting to describe the behavioral tendency represented by the factor, rather than the drive for the behaviors. The adventurous, rebellious and impulsive factors were labeled in our earlier work and we believe the labels best characterize the phenomena we are trying to describe.

The factor we call adventurous risk taking (called impulsiveness by Eysenck) represents self reports of enjoyment of risk, new and exciting experiences, and spur of the moment decisions. The factor we call rebellious (and which is called disinhibition by Zuckerman) represents items such as enjoyment of wild parties, drinking, sex, and drug use. The factor we label impulsive (called impulsivity in the narrow sense by Eysenck) represents reports of behaving without thought and being "carried away." The factor we call physical risk taking (labeled thrill and adventure seeking by Zuckerman) represents reports of enjoyment of activities such as scuba diving, water and snow skiing, parachuting and flying an airplane. Our last factor we labeled unconventional risk taking (called experience seeking by Zuckerman) represents reports of preference for non-normative dress, and unpredictable friends.

To develop the risk indices, we created variables which represent the summed averages of the items representing that factor.[1] Table 2 presents the inter-factor correlations for the five factors as well as the numbers of subjects for which all data are available. The association between adventurous risk taking and physical risk taking is moderate (r = .57) as is that between adventurous risk taking and rebellious risk taking (r = .44) and between rebellious risk taking and physical risk taking (r = .40). The moderate strength of these correlations led us to conclude that while our constructs may share some antecedents, they also are unique.

[TABLE 2 ABOUT HERE]

Risky Behavior

We examined the risk-taking indices as predictors of risky behaviors. One unhealthy behavior is smoking. We asked subjects, Do you smoke? If they said yes, they were asked: How many cigarettes a day? If they said no, they were asked: Have you ever smoked?

Table 3 presents the mean scores on the risk-taking measures for those who currently smoke, those who have quit smoking and those who have never smoked. Oneway ANOVAs were conducted to test for differences among these behaviors. Scheffe' post hoc difference of means tests are used to evaluate which groups are significantly different ($p \leq .01$). Those who have quit smoking score statistically significantly higher on rebelliousness (M = 3.7) when compared to those who have never smoked (M = 3.2). On the other hand, current smokers score statistically significantly higher on impulsiveness (M = 3.9) when compared with those who have never smoked (M = 3.5). There are no differences among smokers, quitters and non-smokers on the other risk-taking factors.

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1 Because not all the items were included in all studies some subjects will have scores which are a function of less than all items in the factor.

We also asked respondents how many miles per hour above the legal speed limit they would be willing to drive on an open highway. There is a positive linear relationship between the number of miles per hour over the speed limit respondents were willing to drive and how high they score on all the risk-taking measures, with the exception of unconventionality. A test for linear trends was significant in each case at $p \leq .01$.

[TABLE 3 ABOUT HERE]

The next stage in this validation process is to explore the relationships between the risk-taking measures and other health constructs.

Risk Taking: Cognitive and Affective Involvement

Involvement is a strong indicator of readiness to process information about topics of relevance. In our definition, involvement refers to the extent to which something is personally relevant; it is a motivation to act. Theorists have suggested several dimensions of involvement (Adler, 1989; Chaffee & Roser, 1986; Gibbs & Ferguson, 1988; Grunig, 1976; Grunig & Childers, 1988; Nowak & Salmon, 1987; Roser, 1986; Salmon, 1986). This research uses an index designed to measure affective and cognitive involvement with one's own health. (See Gibbs and Ferguson, 1988 for a discussion of the assumptions leading to the constructed index.) Table 4 presents a principal axis factor analysis of the 23 items which yielded six factors; two are labeled positive and negative affective involvement with one's health, two are labeled active and non-active cognitive involvement, one is labeled simply non-involvement and one is labeled weight involvement.

[TABLE 4 ABOUT HERE]

The items representing these factors are summed and averaged into an index. Table 5 presents the significant correlations between the risk-taking measures and types of health involvement. Positive feelings or emotions about one's health are associated with high scores on adventurous risk taking (r [n=500] = .19, $p \leq .001$) and physical risk taking (r [n=500] = .20, $p \leq .001$), and with low scores on unconventional risk taking (r [n=500] = -.17, $p \leq .001$. High scores on impulsive risk taking are associated with having negative feelings about one's health (r [n=498] = .15, $p \leq .001$). They are also associated with low scores on active cognitive involvement(r [n=260] = -.20, $p \leq .001$). High scores on health non-involvement are likely to be associated with low scores on impulsive risk taking (r [n=260] = -.17, $p \leq .01$) and on unconventional risk taking (r [n=260] = -.26, $p \leq .001$).

[TABLE 5 ABOUT HERE]

Health Locus of Control

Since Rotter (1966) developed the locus of control construct, a great deal of research has provided evidence for how this situational orientation affects both judgment and behavior. Based on social learning theory, Rotter proposed that those high in an internal orientation, or locus of control viewed events or consequences as coming from their own actions, while those with an external orientation regard events as determined by outside forces such as chance, fate, or powerful others.

Fiske and Taylor (1984) report that health locus of control is a better predictor of chronic illness-related behavior than it is of preventative behaviors. Research findings indicate that those high in internal LOC are more likely to seek information and make better use of it than are externals (Phares, Richies, & Davies, 1968) and they are more likely to take action to cope with their problems (Sullivan & Reardon, 1986).

The ten items measuring health locus of control are from the Health Locus of Control Index (Wallston, Wallston, Kaplan, & Maides, 1976). High values on this index represent internal locus of control. Some of the items include the following: a) If I take care of myself, I can avoid illness. b) People who never get sick are just plain lucky. c) Good health is largely a matter of good fortune. Table 6 presents all of the items in this index.

[TABLE 6 ABOUT HERE]

The three health locus of control indices were correlated with the risk-taking indices. Adventurous risk taking is positively correlated with Type I internal health locus of control (r [n=250] = .18, $p \leq .01$). The higher the adventurousness score, the more likely subjects are to say they are responsible for their own health or illness. Impulsive risk taking, however, is negatively correlated with Type II internal health locus of control (r [n=247] = -.15, $p \leq .01$). In other words, those high in impulsiveness perceive their own health as out of their control.

Conviction

Abelson (1986, 1988) proposed a model of conviction which may prove to be very useful to help us understand the conditions under which attitudes will change. Conviction refers to the degree to which an attitude or belief is clung to, possessed or valued. This is very similar to the notion of attitude importance (Krosnick, 1986; 1988) which was labeled centrality and defined as the extent of the links between the self and the attitude object. The nine items we use in this study are from Abelson's (1988) validation.

Factor analysis of the nine health conviction items suggested a one-factor solution. Table 7 presents the items and the loadings from the unrotated factor matrix. These items were summed and averaged into a Conviction Index. The risk-taking measures were then correlated with the Conviction Index. We find positive

correlations between conviction and adventurous risk taking (r [n = 493] = .13, $p \leq$ .01), and physical risk taking (r [n = 493] = .13, $p \leq$ .01).

[TABLE 7 ABOUT HERE]

Need For Cognition

Need for cognition (NFC) is a concept believed to measure differences in tendencies to engage in and enjoy thinking (Cacioppo & Petty, 1984; Cacioppo, Petty, & Morris, 1983; Petty & Cacioppo, 1986a; Petty & Cacioppo, 1986b). NFC refects an individual difference in the likelihood of effortful information processing. NFC was measured with 15 items from the Cacioppo and Petty scale (1984). The items were submitted to a principal axis factor analysis. The scree plot suggested a one-factor solution. The items and factor loadings are reported in Table 8. Adventurousness is positively correlated with NFC (r [n = 372] = .25, $p \leq .001$). Impulsiveness, however, is negatively correlated with NFC (r [n = 371] = -.30, $p \leq .001$).

[TABLE 8 ABOUT HERE]

Media and Health Information

To measure media exposure subjects were asked, "In an average week, how many days would you say you watch television/read a newspaper/read a magazine/listen to the radio." To measure how much subjects rely on these media they were asked, "How would you feel if you were not able to watch your favorite program/read your favorite newspaper/magazine/listen to your favorite radio station?" Finally, to measure use of each of these media for information about health hazards, subjects were asked how likely they would be to watch television/read newspapers/magazines/listen to the

radio to learn about health issues. These media use and exposure measures were then correlated with the risk-taking measures. Table 9 presents these correlations.

Television exposure is negatively correlated with adventurousness (r [n = 624] = -.10, $p \leq .01$), and physical risk taking (r [n = 503]= -.12, $p \leq .01$). Radio exposure, on the other hand, is positively correlated with adventurousness (r [n = 500] = .12, $p \leq .01$), physical risk taking (r [n = 500] = .20, $p \leq .001$) and rebellious risk taking (r [n = 500] = 17, $p \leq .001$). Use of newspapers, television, radio and magazines for health information is negatively correlated with rebellious risk taking (r [n = 499] = -.17, $p \leq .001$), (r [n = 502] = -.22, $p \leq .001$), r [n = 492] = -.16, $p \leq .001$) (r [n = 485] = -.11, $p \leq .01$), respectively. Also, use of newspapers and television for health information is negatively correlated with unconventional risk taking (r [n = 498] = -.16, $p \leq .001$), (r [n = 748]= -.13, $p \leq .001$), respectively. Finally, rebellious risk taking and physical risk taking are positively correlated with reliance on radio (r [n = 494] =.17, $p \leq .001$), (r [n = 494] = .14, $p \leq .01$), respectively.

[TABLE 9 ABOUT HERE]

Source Confidence

Subjects rated some 10 possible sources of information about environmental and/or health hazards on the confidence or trust they had in the source. The ten sources were:

1. Environmental Protection Agency (EPA)
2. Newspaper articles
3. State government agencies
4. Your doctor
5. University scientists
6. The American Cancer Society

7. Television programs

8. Government scientists

9. The American Medical Association

10. The Surgeon General

The scores on the source confidence measures were correlated with the risk-taking indices; see table 10. We found relationships between our risk-taking measures and confidence in "your doctor", government scientists, the Surgeon General, the American Medical Association, the Environmental Protection Agency and the American Cancer Society. The higher the adventurousness scores, the higher the confidence in "your doctor" (r [n = 727] = .11, $p \leq .01$) and the Environmental Protection Agency (r [n = 725] = .10, $p \leq .01$). Physical risk taking is positively correlated with confidence in the EPA (r [n = 494] = .17, $p \leq .001$), the American Cancer Society (r [n = 496] = .11, $p \leq .01$), the American Medical Association (r [n = 496] = .11, $p \leq .01$), the Surgeon General (r [n = 496] = .13, $p \leq .01$), and government scientists (r [n = 496] = .11, $p \leq .01$). Unconventional risk taking is negatively associated with confidence in the Surgeon General (r [n = 495] = -.12, $p \leq .01$).

[TABLE 10 ABOUT HERE]

Demographics

Several demographic variables are measured in these seven studies: age, education, income, marital status, religious preference, church attendance, and gender. Oneway ANOVAs were conducted to test for differnces among these groups. Scheffe' post hoc difference of means tests are used to evaluate the significance of the differences ($p \leq .01$).

Risk taking of all types, with the exception of impulsive risk taking, is a linear function of age (Table 11). Younger people tend to have more predispositions toward risk taking than do older people. For education, those with less than a

four-year college degree (and not currently in school) score significantly higher on implusiveness compared to those who have a four-year degree or more. Income is also associated with risk taking. Those who report incomes of less than $20,000 or greater than $30,000 score higher on rebelliousness than do those with incomes in the $20-29,999 range or above $40,000. Those who report incomes of less than $20,000 score highest on the impulsive, physical risk and unconventional risk taking measures. Marital status is also associated with risk-taking tendencies. Generally, single people demonstrate greater tendencies for risk taking.

[TABLE 11 ABOUT HERE]

Religious preference is related to rebelliousness and unconventional risk taking. Those who are Catholics, Jewish or non-religious, score higher on rebelliousness ($\underline{M}$ = 3.8, 4.1 and 3.8, respectively) when compared to Protestants ($\underline{M}$ = 3.1) or others ($\underline{M}$ = 3.0). Those who report no religious preference score highest in unconventional risk taking ($\underline{M}$ = 3.5), while Protestants score lowest on this measure ($\underline{M}$ = 2.8). In addition, people who regularly attend church score lower in adventurousness ($\underline{M}$ = 4.5) than those who occasionally or never attend church ($\underline{M}$ = 5.0, and 4.9, respectively). Those who regularly attend church score the lowest on rebelliousness ($\underline{M}$ = 2.4) when compared to the others ($\underline{M}$ = 3.2, 3.6, and 3.9 for those who attend frequently, occasionally, and never, respectively). Those who never attend church score the highest on unconventional risk ($\underline{M}$ = 3.5) in comparision with the other groups ($\underline{M}$ = 2.7, 2.8, and 3.0 for those who attend regularly, frequently, and occasionally, respectively).

Males score higher on all of the risk-taking indices with the exception of impulsiveness, where women score higher.

SUMMARY AND DISCUSSION

We believe we have demonstrated the validity of our constructs through their relationships with both risky behaviors and with attitudes. In addition, although we think these data represent an unusually diverse population and the findings are generalizable, the data presented here are correlational.

Profiles of Risk Taking

In this section we paint a broad picture of what we think the adventurous, rebellious, impulsive, physical and unconventional risk taker may be like. We caution the reader, however, to understand that we have not created typologies of individuals, but rather have measured constructs which are associated with the other variables.

Adventurous Risk Taking. Those who are young, single, male, or who never or only occasionally attend church score high in adventurous risk taking. High adventurousness is associated with driving fast. This risk-taking predisposition correlates positively with good attitudes about health, a feeling of control over one's health, and strong health values. These risk takers like to think. Exposure to television is low, while exposure to radio is high, and source confidence is highest for a personal physician or the EPA.

Impulsive Risk Taking. Those who are young, single, female or smokers score high on impulsiveness. Speeders are impulsive. Those predisposed to impulsive risk taking, score low on cognitive involvement with health, have negative feelings about health, don't feel in control of their health and have little concern about their health. Impulsiveness is associated with a dislike of thinking.

Rebellious Risk Taking. Again, those who are young, single, or male score high on rebelliousness. Speeders are also rebellious. Smokers and those who kicked the habit score high on rebelliouness. Those who are Catholic or Jewish, or attend

church or synagogue only occasionally, are high on rebelliousness. This predisposition is associated with high radio use and high reliance on radio, but a low reliance on all media for health information.

Physical Risk Taking. The young, single, or male tend to exhibit high physical risk-taking tendencies. Physical risk taking is associated with high or low incomes, but not mid-range income. Those who only occasionally or never attend church score high in physical risk taking. Speeders are physical risk takers. Good feelings about health, strong commitment to one's own health beliefs and concern about health are associated with physical risk taking. A predisposition to physical risk taking is associated with low levels of television exposure, but high exposure and reliance on radio. Confidence is high when the source of information is the EPA, American Cancer Society, the AMA, the Surgeon General or government scientists.

Unconventional Risk Taking. Finally, the young, the single, or males are high in unconventional risk taking. This predisposition is associated with never going to church, being a Protestant or non-religious. Those who don't care about their health, or don't have strong feelings about their health and don't have confidence in the Surgeon General score high on unconventional risk taking. A predisposition for unconventional risk taking is related to little use of newspapers or television for health information.

Theory of Information Processing and Risk Taking

These findings and our earlier research lead us to conclude that these risk-taking behaviors may have different antecedents. Also, we expect different relationships between these constructs and other variables important to information processing.

We agree with Zuckerman, Perskey, Hopkins, Murtaugh, Basu and Shilling (1966), that risk takers may exhibit a higher need for arousal than non-risk takers. Thus, messages should be arousing in order to gain their attention. If one thinks of the high risk taker as a young, single person who, as our data suggest, has a relatively

high reliance on radio, a successful way of getting this risk taker's attention may be through novel radio PSAs presenting a Safe Sex message or in the form of a popular song.

Actual processing beyond mere attention will vary with the type of risk taking and will depend on other structural aspects of the message such as target, source credibility, and message content.

Adventurous and physical risk taking are associated with concern for the effects of health risks on the self. We expect that these risk takers will be interested in health information and centrally process that information (Petty & Cacioppo, 1986b). Because these are thoughtful risk takers, we expect them to respond favorably to expert sources and to messages that target the self.

Impulsive risk takers are much more difficult to reach. They do not like to think and we expect that they may process information heuristically (Chaiken, 1987). Instead of a novel frame for the message, these messages may have to be embedded in other arousing stimuli. For example, embedding a "quit smoking" message in a soap opera may be one way of reaching the impulsive risk taker. Because these risk takers do not particularly perceive themselves as in control of their own health, the message may be more successful if the risk target is a significant other. Perhaps the motive to quit smoking would be stronger for these risk takers if they saw potential harm to their children.

The rebellious risk takers may also respond better to a message targeting a significant other. They are not going to respond to experts solving their problems. This risk taker might respond positively to a do-it-yourself kit presented as protecting the significant other rather than the self. These risk takers do not want to be told what to do, they want to be in charge.

Of all the risk-taking predispositions, getting the attention of and persuading the unconventional risk taker will be one of the most challenging goals a public relations person will undertake. These risk takers generally do not use media, they

do not have religious affiliations, they do not care about their health, and they do not have confidence in a source as widely respected as the Surgeon General. These risk takers seem to value unconventionality. The source of a message to the unconventional risk taker will have to be as unconventional as they are. For a message to succeed, the risk will have to be seen as a threat to their individuality. Grace Jones would be a celebrity who typifies the unconventional risk taker. A Safe Sex message from Grace Jones that suggests that your unconventional lifestyle might be threatened, and hence your own self-identity at risk if behaviors are not changed, may have some chance of reaching the unconventional risk taker.

Our intention is to extend this research with these risk-taking constructs by examining the effects of variation in the messages for the six experiments outlined in the methodology section of this paper. As discussed above, we expect the message target and the message source to interact with the risk-taking predisposition. Future research will explore the developing theory presented above with the goal of aiding public relations professionals who are attempting to reduce risky behaviors.

TABLE 1
FACTOR ANALYSIS OF RISK TAKING MEASURES
Factor Loadings

FACTOR	1	2	3	4	5	M	SD
ADVENTUROUS RISK TAKING (E-Impulsive Risk Taking):							
1) I often do things on the spur of the moment.	.73					5.3	1.6
2) I quite enjoy taking risks.	.72					4.8	1.5
3) To broaden my horizons I'm willing to take some risks.	.68					5.2	1.3
4) I'm an adventurous person.	.68					5.3	1.4
5) I welcome new and exciting experiences and sensations, even if they are a little frightening and unconventional.	.62	.31				5.3	1.4
6) I sometimes like doing things that are a bit frightening.	.56			.36		4.6	1.6
7) I avoid taking risks.*	.52					4.5	1.6
8) I'd take a job that requires lots of traveling.	.41					4.7	1.9
9) I am a rebellious person.	.37[1]	.34[1]				3.6	1.8
REBELLIOUS RISK TAKING (Z-DIS/Disinhibition):							
10) Keeping the drinks full is the key to a good party.		.80				3.0	1.9
11) I like wild, uninhibited parties.		.71				3.7	1.9
12) I enjoy the company of real "partiers."		.70				3.6	1.8
13) I feel better after taking a couple of drinks.		.59				3.6	1.7
14) I think people should have a great deal of sexual experience before they get married.		.48				3.8	1.8
15) I'd like to try a drug that produces hallucinations.		.47			.41	2.2	1.8
16) Something is wrong with people who need liquor to feel good.*		.45				3.2	1.8
17) I enjoy watching many of the sexy scenes in the movies.		.43				4.5	1.8
18) I don't like rules.		.40				3.7	1.8
19) I like to date members of the opposite sex who are physically exciting.		.38				5.8	1.3
20) If I were to gamble, I'd make big bets.		.28[1]				2.8	1.7

(Risk factors continued)	1	2	3	4	5	M	SD
IMPULSIVE RISK TAKING (E-IMPn/Impulsivity in the Narrow Sense):							
21) I generally do and say things without stopping to think.			.79			3.4	1.8
22) I often get so "carried away" by new and exciting things, that I never think of possible snags.			.73			3.9	1.7
23) I often speak before thinking things out.			.66			3.5	1.7
24) I often get into a jam because I do things without thinking.			.65			3.4	1.7
25) I usually think carefully before doing anything.*			.57		.35	3.6	1.3
26) Before making up my mind, I consider all the advantages and disadvantages.*			.56		.33	3.2	1.4
27) I'm guided more by my feelings than by facts.			.45			4.3	1.6
28) I'm an impulsive person.	.44		.45			4.2	1.7
29) I never buy anything without thinking about it.			.36			3.6	1.9
PHYSICAL RISK TAKING (Z-TAS/Thrill and Adventure Seeking):							
30) I would like to go scuba diving.				.78		4.9	2.0
31) I would enjoy water skiing.				.71		5.5	1.8
32) I would like to learn to fly an airplane.				.59		5.1	2.0
33) I would like to try surfing.				.56		4.7	2.1
34) I think I would enjoy the sensation of skiing very fast down a high mountain slope.	.35			.55		4.7	2.2
35) I would like to try parachute jumping.	.37			.55		4.2	2.3
36) I would like to drive or ride on a motorcycle.				.32		4.7	2.1
UNCONVENTIONAL RISK TAKING (Z-ES/Experience Seeking):							
37) People should dress according to some standards of taste, neatness and style.*					.51	3.3	1.7
38) I prefer friends who are reliable and predictable.*					.46	2.6	1.5
39) I plan for the future.*					.40	2.4	1.4
40) I would like to hitchhike across the country.					.39	2.4	1.9
41) I would never smoke marijuana.*		.32			.38	4.3	2.4
42) I'd never give up my job before I was certain I had another one.*					.33	3.1	1.8
Principal axis factoring, varimax rotation							
Percent of variance explained	23.4	8.8	6.5	4.9	4.2		
Eigenvalue	9.8	3.7	2.7	2.1	1.8		
Standardized Alpha	.90	.84	.83	.83	.59		

*These items have been reverse coded; high numbers reflect high risk taking.
[1]These items have been excluded from the indices constructed for each factor.

TABLE 2
INTER-CORRELATIONS OF RISK TAKING MEASURES

FACTOR	1	2	3	4	5
1) ADVENTUROUS	-				
2) REBELLIOUS	.44[b] (908)	-			
3) IMPULSIVE	.23[b] (1155)	.29[b] (906)	-		
4) PHYSICAL	.57[b] (787)	.40[b] (787)	.10[a] (785)	-	
5) UNCONVENTIONAL	.20[b] (1030)	.32[b] (784)	.16[b] (1027)	.19[b] (784)	-

[a] $p \leq .01$
[b] $p \leq .001$

The number reported below each correlation coefficient is the number of subjects for whom the measures are available.

TABLE 3
RISK TAKING MEANS FOR RISKY BEHAVIORS[1]

RISK FACTORS	ADV	REB	IMP	PHY	UNC
SMOKING					
Current		3.5[ab]	3.9[a]		
Quitters		3.7[a]	3.7[ab]		
Never		3.2[b]	3.5[b]		
MPH OVER LIMIT					
0 mph	4.3[a#]	2.5[a#]	3.2[a#]	3.9[a#]	
1-5 mph	4.5[ab]	2.9[a]	3.6[ab]	4.3[ab]	
6-10 mph	4.9[bc]	3.5[bc]	3.7[ab]	4.8[bc]	
11-15 mph	5.2[cd]	3.9[bd]	4.0[b]	5.4[c]	
16-20 mph	5.4[cde]	4.1[cd]	3.7[ab]	5.7[c]	
21 + mph	5.8[de]	4.8[d]	4.3[b]	5.8[c]	

[1]Numbers reported here represent mean scores on seven-point scales.

[abcd]Those means which do not share superscripts are significantly different from each other. (Scheffe' ad hoc difference of means tests, $p \leq .01$)

[#]Linear trend analysis significant at $p \leq .01$

TABLE 4
FACTOR ANALYSIS OF INVOLVEMENT WITH HEALTH ITEMS

FACTORS	1	2	3	4	5	6
POSITIVE AFFECTIVE INVOLVEMENT:						
1) I'm happiest when I feel physically fit.	.84					
2) When I am healthy I feel good.	.75					
3) I see a strong connection between myself and my health.	.75					
4) I cope better with my daily activities when I feel healthy.	.60					
5) When I'm healthy I feel proud of myself.	.56					
6) I am happy when I can stick to a healthy diet.	.53					
7) Being around physically fit people makes me feel good about myself..	.51					
8) I feel elated after strenuous physical activity.	.43					
NON-ACTIVE COGNITIVE INVOLVEMENT:						
9) I don't have a great deal of knowledge about how to stay healthy.*		-.76				
10) I do not know much about health issues compared to most people.*		-.74				
11) I have a great deal of knowledge that helps me to stay healthy.		-.71				
ACTIVE COGNITIVE INVOLVEMENT:						
12) I think about the possibility of developing health problems.			.59			
13) I frequently think about health issues.			.58			
14) I'm more secure when I can find health information easily.			.58			
15) I get angry when I don't have the health information I need.			.56			
16) Health messages inspire me to take care of myself.			.54			
NEGATIVE AFFECTIVE INVOLVEMENT:						
17) Being ill depresses me.				-.73		
18) I get frustrated when I get ill.				-.69		
19) I get nervous when I know I'm getting sick.			.31	-.60		
HEALTH NON-INVOLVEMENT:						
20) I believe that thinking about your health is a waste of time.*					.80	
21) Health issues do not concern me.*					.52	
HEALTH AND WEIGHT:						
22) I never think about my weight.*						.72
23) Diets frustrate me.						.50
Principal axis factoring, oblique rotation						
Percent of variance explained	27.1	10.0	8.5	6.7	5.2	5.0
Eigenvalue	6.5	2.4	2.1	1.6	1.3	1.2
Standardized Alpha	.84	.81	.76	.73	.67	.51

*These items have been reverse coded; high numbers reflect high involvement.

TABLE 5
CORRELATION OF RISK TAKING WITH HEALTH INVOLVEMENT[1]

	RISK TAKING FACTORS				
HEALTH INVOLVEMENT FACTORS:	ADV	REB	IMP	PHY	UNC
NON-ACTIVE COGNITIVE (n = 261)					
ACTIVE COGNITIVE (n = 260)			-.20[b]		
HEALTH NON-INVOLVEMENT (n = 260)			-.17[a]	.15[a]	-.26[b]
NEGATIVE AFFECT (n = 498)			.15[b]		
POSITIVE AFFECT (n = 500)	.19[b]			.20[b]	-.17[b]
WEIGHT (n = 256)					

[1]For the sake of parsimony only correlations which are significant at $p \leq .01$ are presented in the table.

[a]$p \leq .01$
[b]$p \leq .001$

TABLE 6
FACTOR ANALYSIS OF HEALTH LOCUS OF CONTROL MEASURES[1]

FACTOR	1	2	3
TYPE I:			
1) Whenever I get sick it's because of something I have done or not done.	.65		
2) When I feel ill, I know it is because I have not been getting the proper exercise or eating right.	.64	.30	
3) I am directly responsible for my health.	.62		
4) If I take care of myself, I can avoid illness.	.60		
5) People's ill health results from their own carelessness.	.57		
TYPE II:			
6) I can only do what my doctor tells me to do.*		.74	
7) No matter what I do, if I'm going to get sick I will get sick.*		.57	
TYPE III:			
8) Good health is largely a matter of good fortune.*		.40	.63
9) People who never get sick are just plain lucky.*		.30	.62
10) Most people do not realize the extent to which their illnesses are controlled by accidental happenings.*			.41
Principal axis factoring, varimax rotation			
Percent of Variance Explained	26.3	21.9	11.2
Eigenvalue	2.6	2.2	1.1
Standardized Alpha	.74	.67	.62

*These items are reverse coded, thus a high score on any question here reflects a high internal locus of control and a low score reflects a high external locus of control.
[1]Only factor loadings greater than .30 are reported.

TABLE 7
FACTOR ANALYSIS OF CONVICTION ABOUT HEALTH

LOADINGS FROM UNROTATED FACTOR MATRIX:

1) I am extremely concerned about health issues.	.84
2) I've often told others in my family about my views on health.	.79
3) I think about my health often.	.79
4) I've often expressed my ideas about health to my friends.	.77
5) I hold my views on health strongly.	.75
6) My health beliefs are important to me.	.71
7) I've held my views about health a long time, compared to most people.	.68
8) I would be willing to spend a day a month working for a group that shares my beliefs about health.	.63
9) I can't imagine ever changing my mind about my health habits.	.45

Principal axis factoring

Percent of variance explained	56.2
Eigenvalue	5.1
Standardized Alpha	.90

TABLE 8
FACTOR ANALYSIS OF NEED FOR COGNITION MEASURES[1]

LOADINGS FROM UNROTATED FACTOR MATRIX

1) I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.*	.70
2) I try to anticipate and avoid situations where there is a likely chance that I will have to think in depth about something.*	.68
3) I think only as hard as I have to.*	.68
4) I like to have the responsibility of handling a situation that requires a lot of thinking.	.66
5) Thinking is not my idea of fun.*	.64
6) I really enjoy a task that involves coming up with new solutions to problems.	.58
7) Learning new ways to think does not excite me very much.*	.54
8) I find satisfaction in deliberating hard and for long hours.	.53
9) I prefer complex to simple problems.	.53
10) The idea of relying on thought to make my way to the top appeals to me.	.52
11) The notion of thinking abstractly is appealing to me.	.49
12) I like tasks that require little thought once I have learned them.*	.47
13) It is enough for me that something gets the job done; I don't care how or why it works.*	.46
14) I prefer my life to be filled with puzzles that I must solve.	.44
15) I prefer to think about small daily projects rather than long term projects.*	.35

Principal axis factoring

Percent of variance explained	34.5
Eigenvalue	5.2
Standardized Alpha	.86

*These items have been reverse coded; high numbers represent high need for cognition.
[1]Only factor loadings greater than .30 are reported.

TABLE 9
CORRELATION OF RISK TAKING WITH MEDIA USE[1]

MEDIA USE ITEMS:	RISK TAKING FACTORS ADV	REB	IMP	PHY	UNC
EXPOSURE					
Television	-.10[a] (624)			-.12[a] (503)	
Newspapers					
Magazines					
Radio	.12[a] (500)	.17[b] (500)		.20[b] (500)	
USE FOR HEALTH INFO					
Television		-.22[b] (502)			-.13[b] (748)
Newspapers		-.17[b] (499)			-.16[b] (498)
Magazines		-.11[a] (485)			
Radio		-.16[b] (492)			
RELIANCE					
Television					
Newspapers					
Magazines					
Radio		.17[b] (494)		.14[a] (494)	

[1]For the sake of parsimony only correlations which are significant at $p \leq .01$ are presented in the table.

[a]$p \leq .01$
[b]$p \leq .001$

TABLE 10
CORRELATION OF RISK TAKING WITH CONFIDENCE IN SOURCES[1]

	RISK TAKING FACTORS				
SOURCES	ADV	REB	IMP	PHY	UNC
EPA	.10[a] (725)			.17[b] (494)	
Newspaper articles					
State Govt. agencies					
Your doctor	.11[a] (727)				
University scientists					
American Cancer Society				.11[a] (496)	
Television programs					
Government scientists				.11[a] (496)	
American Medical Association				.11[a] (496)	
Surgeon General				.13[a] (496)	-.12[a] (495)

[1]For the sake of parsimony only correlations which are significant at $p \leq .01$ are presented in the table.

[a] $p \leq .01$
[b] $p \leq .001$

TABLE 11
RISK TAKING AND DEMOGRAPHIC MEASURES[1]

RISK VARIABLES	ADV	REB	IMP	PHY	UNC
AGE					
18-21 years	$4.9^{ab\#}$	$3.7^{a\#}$	3.9^{c}	$5.0^{a\#}$	$3.6\star$
22-29 years	5.0^{a}	3.7^{a}	3.8^{bc}	5.0^{a}	2.9^{a}
30-39 years	4.6^{bc}	3.1^{b}	3.6^{ab}	4.3^{b}	3.2^{a}
40-59 years	4.4^{c}	2.6^{b}	3.5^{a}	4.0^{b}	2.9^{a}
60 + years	3.9^{c}	2.1^{b}	3.2^{a}	3.6^{b}	2.6^{a}
EDUCATION[2]					
Some college			$3.9\#$		
4-year degree			3.5^{a}		
Grad school			3.2^{a}		
INCOME					
Below $20,000		3.3^{b}	$3.8^{b\#}$	4.9^{a}	$3.6^{b}\star$
$20M-$29M		2.7^{a}	3.4^{a}	3.9^{b}	2.7^{a}
$30M-$39M		3.0^{b}	3.4^{ab}	4.3^{ab}	3.1^{ab}
$40,000 +		2.8^{a}	3.3^{ab}	4.6^{ab}	2.7^{a}
MARITAL STATUS					
Married	4.4^{a}	2.6^{a}	3.4^{b}	4.1^{b}	
Single	5.0	3.8	3.8^{a}	5.0^{a}	
Other	4.7^{a}	2.9^{a}	3.5^{ab}	4.6^{ab}	
RELIGION					
Protestant		3.1^{a}			2.8^{a}
Catholic		3.8^{bcd}			3.2^{ab}
Jewish		4.1^{c}			3.2^{ab}
Other		3.0^{a}			3.0^{ab}
None		3.8^{abcd}			3.5^{b}
CHURCH ATTENDANCE					
Regularly	$4.5^{a\#}$	$2.4\#$		$4.2^{b\#}$	$2.7^{a\#}$
Frequently	5.0^{ab}	3.2^{a}		4.8^{ab}	2.8^{a}
Occasionally	5.0^{b}	3.6^{ab}		5.0^{a}	3.0^{a}
Never	4.9^{b}	3.9^{b}		4.9^{a}	3.5
GENDER					
Males	5.0	4.0	3.6	5.1	3.1
Females	4.8	3.3	3.9	4.6	2.8

[1]Numbers reported represent mean scores on seven-point scales.
[2]For education only data from non-college students were used.

^{abcd}Those means which do not share superscripts are significantly different from each other. (Scheffe' post hoc difference of means tests, $p \leq .01$)

$^{\#}$Linear trend analysis significant at $p \leq .01$

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